HOW TO USE THE LIFEPAK 1000 DEFIBRILLATOR

This section provides an overview of information and instructions for using the LIFEPAK 1000 defibrillator.

MODES OF OPERATION

You can use the LIFEPAK 1000 defibrillator for:

- Automated external defibrillation (AED mode)
- Manual defibrillation therapy (Manual mode) (Requires ECG display option)
- ECG monitoring (ECG mode) (Requires ECG display option)

Defibrillation Warnings and Cautions

WARNINGS!

Shock hazard.

The defibrillator delivers up to 360 J of electrical energy. When discharging the defibrillator, do not touch the disposable therapy electrodes.

Shock hazard.

If a person is touching the patient, bed, or any conductive material in contact with the patient during defibrillation, the delivered energy may be partially discharged through that person. Clear everyone away from contact with the patient, bed, and other conductive material before discharging the defibrillator.

Possible skin burns.

During defibrillation, air pockets between the skin and therapy electrodes may cause patient skin burns. Apply therapy electrodes so that entire electrode adheres to skin. Do not reposition the electrodes once applied. If the position must be changed, remove and replace with new electrodes.

Possible skin burns and ineffective energy delivery.

Therapy electrodes that are dried out or damaged may cause electrical arcing and patient skin burns during defibrillation. Do not use therapy electrodes that have been removed from foil package for more than 24 hours. Do not use electrodes beyond expiration date. Check that electrode adhesive is intact and undamaged. Replace therapy electrodes after 50 shocks.

Possible interference with implanted electrical device.

Defibrillation may cause implanted devices to malfunction. Place therapy electrodes away from implanted devices if possible. Check implanted device function after defibrillation, if possible.

Possible misinterpretation of data.

Do not analyze in a moving vehicle. Motion artifact may affect the ECG signal resulting in an inappropriate shock or no shock advised message. Motion detection may delay analysis. Stop vehicle and stand clear of patient during analysis.

Possible misinterpretation of data.

Do not move the AED during analysis. Moving the AED during analysis may affect the ECG signal resulting in an inappropriate shock or no shock advised decision. Do not touch the patient or the AED during analysis.

CAUTION!

Possible equipment damage.

Before using this defibrillator, disconnect all equipment that is not defibrillator-protected from the patient.

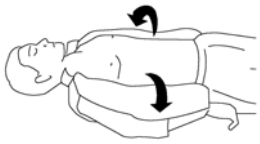
DEFIBRILLATION IN AED MODE

The LIFEPAK 1000 defibrillator uses the patented Medtronic Shock Advisory System to evaluate the patient's heart rhythm. The LIFEPAK 1000 defibrillator has an optional feature that displays the ECG waveform and Heart Rate Indicator in AED mode. The operation in AED mode remains the same whether or not the defibrillator displays the ECG waveform. When **ECG DISPLAY** is set to **ON**, the ECG appears with all of the AED messages and prompts. When **ECG DISPLAY** is set to **OFF**, the messages and prompts fill the screen.

Basic Steps for Using the LIFEPAK 1000 Defibrillator

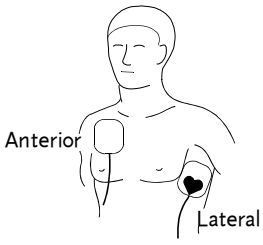
1 Establish that the patient is in cardiopulmonary arrest (the patient must be unresponsive, not breathing normally and showing no signs of circulation).

2 Press **ON/OFF** to turn on the defibrillator (the green LED illuminates). Voice prompts will sound, guiding you through the rescue process.



3 Prepare the patient for therapy electrode placement.

- If possible, place the patient on a hard surface away from standing water.
- Remove clothing from the patient's upper torso.
- Remove excessive hair from the electrode sites. If shaving is necessary, avoid cutting the skin.
- Clean the skin and dry it briskly with a towel or gauze.
- Do not apply alcohol, tincture of benzoin, or antiperspirant to the skin.



4 Apply the therapy electrodes to the patient's chest. Starting from one end, press the electrodes firmly onto the patient's skin, as shown.

WARNING!
Excessive Energy Delivery.
For children less than 8 years of age or 55 lbs (25 kg), use Infant/Child Reduced Energy Defibrillation electrodes. Do not use Pediatric QUIK-COMBO electrodes; these electrodes do not attenuate the energy

5 Connect the electrodes to the defibrillator (if they are not already connected).

6 Follow the screen messages and voice prompts provided by the defibrillator.

The following descriptions of voice prompts and messages are based on the default settings for AED mode. Changing the setup options may result in different AED behavior.

CONNECT ELECTRODES	Voice prompt and message when a patient has not been connected to the defibrillator.
STAND CLEAR, ANALYZING NOW, STAND CLEAR	Voice prompt and message when a patient is connected to the defibrillator. Do not touch or move the patient, or therapy cables, during analysis. ECG analysis requires 6–9 seconds.
PREPARING TO SHOCK	Message displayed if the defibrillator detects a shockable rhythm. The defibrillator charges to the joule setting for that shock number. A rising tone and a charging bar on the screen indicate that the defibrillator is charging.
STAND CLEAR, PUSH SHOCK BUTTON	Voice prompt and message when charging is complete. The red ⚡ button flashes. *Clear everyone away from the patient, bed, or any equipment connected to the patient.* Press the red ⚡ button to discharge the defibrillator. The energy level for shocks depends on the energy protocol setup option and the analysis decision after shocks. If the red ⚡ button is not pressed within 15 seconds, the defibrillator disarms the shock button, and the ***DISARMING...*** message appears on the screen.
ENERGY DELIVERED	Message displayed after each shock.
START CPR	A message and countdown timer (min:sec format) appears for the CPR time.
NO SHOCK ADVISED	Voice prompt and message when the defibrillator detects a nonshockable rhythm. The defibrillator will not charge, and a shock cannot be delivered. When a ***NO SHOCK ADVISED*** prompt follows a shock and CPR, the energy level will not increase for the next shock.

Special Situations for Electrode Placement

When placing electrodes on the patient, be aware of special situations:

Obese Patients or Patients with Large Breasts

Apply the electrodes to a flat area on the chest, if possible. If skin folds or breast tissue prevent good adhesion, spread skin folds apart to create a flat surface.

Thin Patients

Follow the contour of the ribs and spaces when pressing the electrodes onto the torso. This limits air space or gaps under the electrodes and promotes good skin contact.

Patients with Implanted Pacemakers

If possible, place defibrillation electrodes away from the internal pacemaker generator. Treat this patient like any other patient requiring emergency care.

Patients with Implanted Defibrillators

Apply the electrodes in the anterior-lateral position. Treat this patient like any other patient requiring emergency care.

Alternate Anterior-Posterior Electrode Position

The electrodes may be placed in an anterior-posterior position as follows:

1 Place either the ♥ or + therapy electrode over the left precordium as shown in Figure 3-1. The upper edge of the electrode should be below the nipple. Avoid placement over the nipple, the diaphragm, or the bony prominence of the sternum if possible.

2 Place the other electrode behind the heart in the infrascapular area as shown in Figure 3-1. For patient comfort, place the cable connection away from the spine. Do not place the electrode over the bony prominences of the spine or scapula.

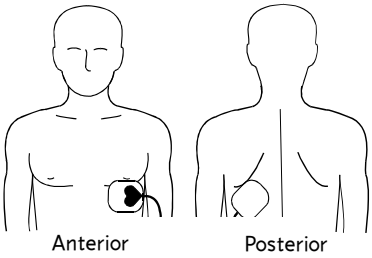


Figure 3-1 Anterior-Posterior Placement

DEFIBRILLATION IN MANUAL MODE

The LIFEPAK 1000 defibrillator provides a manual mode to override the AED features of the defibrillator. Manual mode provides operator-initiated analysis, charge, shock, and disarm functions. This mode is useful in a tiered response system when a provider trained in manual defibrillation and authorized to place the defibrillator in manual mode takes over the scene from a BLS-AED trained provider.

To use manual mode:

1 Press the Menu key.

2 Select **YES** to enter manual mode. The ECG trace and Heart Rate Indicator will appear on the screen.

3 If the displayed ECG rhythm appears shockable, press **CHARGE** to initiate charging of the defibrillator. The screen will indicate that the defibrillator is charging and a charge tone will sound.

4 Clear everyone away from the patient, bed, or any equipment connected to the patient.

5 When the charge is complete, press the flashing red **SHOCK** button to deliver energy to the patient.

6 After delivering a shock, the energy for each subsequent shock is automatically selected based on the energy level configured in Setup.

Note: To remove an unwanted charge at any time, press **DISARM**.

Analysis

The LIFEPAK 1000 defibrillator can be set up to display an **ANALYZE** softkey when in manual mode.

To initiate an analysis:

1 Confirm that the patient is unresponsive, not breathing, and without a pulse.

2 Press **ANALYZE**.

3 If the rhythm analysis results in a No Shock Advised decision, the defibrillator remains in manual mode without further prompts.

4 If the rhythm analysis results in a Shock Advised decision, the defibrillator automatically begins charging accompanied by a charge tone. If you determine that a shock is not warranted, press **DISARM**.

5 When the charge is complete, clear everyone away from the patient, bed, or any equipment connected to the patient.

6 Press the flashing red **SHOCK** button to deliver energy to the patient.

7 After delivering a shock, the defibrillator remains in manual mode.

TROUBLESHOOTING TIPS FOR DEFIBRILLATION

This section explains problem conditions that you may encounter while using the defibrillator.

Table 3-1 Troubleshooting Tips for Defibrillation

Observation	Possible Cause	What To Do
Screen blank and **ON** LED lit.	Screen not functioning properly.	• Contact authorized service personnel for repair. • AED and therapy functions may still operate. If needed for therapy, continue to use device to treat patient.
CONNECT ELECTRODES voice prompt is heard.	Poor electrode-to-skin contact.	• Firmly press electrodes on patient's skin. • Clean, shave, and dry the patient's skin prior to placing pads on skin.
	Electrode pads are dry, damaged, or have passed the expiration date.	• Replace the electrode pads.
	Electrode pads are not removed from the liner.	• Remove the electrode pads from the liner and apply them to the patient's chest
CHECK CONNECTOR AND ELECTRODES voice prompt is heard.	Connection to the defibrillator is inadequate.	• Check to be sure that the electrode connector is completely inserted.
Defibrillator cannot deliver the required shock.	Defibrillator battery power is low.	• Administer CPR if the patient is not responding, not breathing normally, and showing no signs of circulation. • Check battery indicator. Replace battery if needed.

Table 3-1 Troubleshooting Tips for Defibrillation (Continued)

Observation	Possible Cause	What To Do
Voice prompts sound faint or distorted.	Defibrillator battery power is low.	• Administer CPR if the patient is not responding, not breathing normally, and showing no signs of circulation. • Check battery indicator. Replace battery if needed.
MOTION DETECTED and ***STOP MOTION*** voice prompts are heard.	Patient movement because of location.	• Move patient to stable location, if possible.
	Patient movement because of breathing.	• Check patient for normal breathing.
	CPR being performed during analysis.	• Stop CPR during analysis.
	Vehicle motion.	• Stop vehicle during analysis, if possible.
	Electrical/radio frequency interference.	• Move communication or other suspected devices away from the defibrillator when possible.
Defibrillator does not deliver voice prompts or beeping tones after you turn it on.	Depleted battery.	• Administer CPR if the patient is not responding, not breathing normally, and showing no signs of circulation. • Check battery indicator. Replace battery if needed. • Contact authorized service personnel.
The readiness display is blank.	The defibrillator has been turned on.	• Normal condition when the defibrillator is in use.
	Operating temperature is too low.	• Operate the defibrillator within the specified temperature range.
	LCD not operating properly.	• Contact authorized service personnel.

ECG MONITORING (ECG MODE)

WARNING!

Possible misinterpretation of ECG data.

The frequency response of the screen is intended only for basic ECG rhythm identification; it does not provide the resolution required for pacemaker pulse visibility, accurate measurements, such as QRS duration, and ST segment interpretation. For such purposes, use ECG monitors with an appropriate frequency response.

Possible delay in therapy.

Do not attempt to connect a 3-wire ECG cable to a QUIK-COMBO therapy cable or any other AED. The ECG cable is functional only with the LIFEPAK 1000 defibrillator.

The LIFEPAK 1000 defibrillator provides nondiagnostic ECG display of the patient's heart rhythm when the ECG cable is connected and the electrodes are applied.

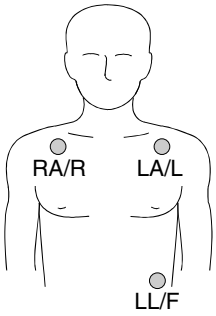
Note: You do not have to turn the defibrillator off before changing from therapy electrodes to the ECG cable or vice versa.

To monitor a patient's ECG:

1 Connect the ECG cable.

Note: The ECG cable uses the same receptacle used by the therapy electrodes.

2 Apply ECG electrodes to the patient's chest as shown in Figure 3-2



AHA Labels		IEC Labels	
RA	Right Arm	**R**	Right
LA	Left Arm	**L**	Left
LL	Left Leg	**F**	Foot

Figure 3-2 Connecting the ECG Electrodes for ECG monitoring

After the ECG electrodes are connected, the defibrillator displays the patient's heart rhythm and heart rate in a lead II configuration. Lead II is the only lead available with this cable.

While in ECG mode, the defibrillator's shock capability is disabled; however, the defibrillator continues to evaluate the patient's ECG for a potentially shockable rhythm. Remember that the presence of an ECG rhythm does not ensure that the patient has a pulse.

If a shockable rhythm is detected, the defibrillator prompts ***CONNECT THERAPY ELECTRODES***.

1 Confirm the patient's condition: Not responsive? Not breathing? No signs of circulation?

2 Remove the ECG cable and connect the therapy electrodes to the defibrillator.

3 Apply the therapy electrodes to the patient's chest, keeping them at least 2.5 cm (one inch) away from the ECG electrodes. If necessary, remove the ECG electrodes.

4 Follow the defibrillator's voice and screen prompts.

Troubleshooting Tips for ECG Monitoring

If problems occur while monitoring the ECG, check this list of observations for troubleshooting assistance.

Table 3-2 Troubleshooting Tips for ECG Monitoring

Observation	Possible Cause	What to Do
Screen blank and **ON** LED lit.	Screen not functioning properly.	• Contact authorized service personnel for repair. • AED and therapy functions may still operate. If needed for therapy, continue to use device to treat patient.
CONNECT ECG LEADS message appears	One or more ECG electrodes are disconnected.	• Confirm ECG electrode connections.
	Poor electrode-to-skin contact.	• Reposition cable and/or lead wires to prevent electrodes from pulling away from patient. • Clean, shave, and dry the patient's skin as recommended on page 3-3. • Replace electrodes. • Change cable.
	Broken ECG cable lead wire.	• Check ECG cable continuity. If lead wire is broken, replace ECG cable.
Poor ECG signal quality.	Poor electrode-to-skin contact.	• Reposition cable and/or lead wires to prevent electrodes from pulling away from patient. Secure cable clasp to patient's clothing. • Clean, shave, and dry the patient's skin as recommended on page 3-3. • Replace electrode(s).
	Outdated, corroded, or dried-out electrodes.	• Check date codes on electrode packages. • Use only silver/silver chloride electrodes with Use By dates that have not passed. • Leave electrodes in sealed packet until time of use.
	Loose connection.	• Check/reconnect cable connections.
	Damaged cable or connector/lead wire.	• Inspect ECG and therapy cables. • Replace if damaged. • Check cable with simulator and replace if malfunction observed.
	Noise because of radio frequency interference (RFI).	• Check for equipment causing RFI (such as a radio transmitter) and relocate or turn off equipment power.

Table 3-2 Troubleshooting Tips for ECG Monitoring (Continued)

Observation	Possible Cause	What to Do
Baseline wander (low frequency/high amplitude artifact).	Inadequate skin preparation. Poor electrode-to-skin contact.	• Clean, shave, and dry the patient's skin as recommended on page 3-3. • Replace electrodes.
Fine baseline artifact (high frequency/low amplitude).	Inadequate skin preparation. Isometric muscle tension in arms or legs.	• Clean, shave, and dry the patient's skin as recommended on page 3-3. • Replace electrodes. • Confirm that limbs are resting on a supportive surface. • Check electrodes for proper adhesion.